

## Caught between Scylla and Charybdis: How Economic Stressors and Occupational Risk Factors Influence Workers' Occupational Health Reactions to COVID-19

Robert R. Sinclair\* 

*Clemson University, USA*

Tahira M. Probst 

*Washington State University Vancouver, USA*

Gwendolyn Paige Watson 

*Clemson University, USA*

Andrea Bazzoli 

*Washington State University Vancouver, USA*

Workers and their families bear much of the economic burden of COVID-19. Even though they have declined somewhat, unemployment rates are considerably higher than before the start of the pandemic. Many workers also face uncertainty about their future employment prospects and increasing financial strain. At the same time, the workplace is a common source of transmission of COVID-19 and many jobs previously seen as relatively safe are now viewed as potentially hazardous. Thus, many workers face dual threats of economic stress and COVID-19 exposure. This paper develops a model of workers' responses to these dual threats, including risk perception and resource depletion as mediating factors that influence the relationship of economic stress and occupational risk factors with COVID-19 compliance-related attitudes, safe behavior at work, and physical and mental health outcomes. The paper also describes contextual moderators of these relationships at the individual, unit, and regional level. Directions for future research are discussed.

### INTRODUCTION

In Homer's *Odyssey* (n.d.), the hero Odysseus is forced to sail through a narrow straight bounded by Scylla, a six-headed monster, on one side and by

Charybdis, often portrayed as a giant whirlpool on the other. Odysseus chose to sail closer to Scylla to avoid the risk of Charybdis consuming his whole ship and survived, but at the cost of six of his men who were eaten by the monster. This story illustrates the perils of having to choose the lesser of two evils. In 2020, many workers face a similar odyssey, being forced to deal with the dual hazards of exposure to COVID-19 at work and the economic hazards associated with potentially losing one's job as an important source of income. In some ways, Odysseus had it better—as the captain of the ship, he could at least choose for himself and his crew. Contemporary workers often have little choice about whether to work in jobs that could expose them to the virus. Therefore, in this paper, we describe how economic considerations intersect with concerns about COVID-19 exposure to shape employees' safety, health, and well-being.

The human costs of the COVID-19 pandemic have been well documented. As of this writing (November 2020) over 50 million cases have been reported worldwide with over 1,200,000 deaths (Worldometers, n.d.). The United States has borne a disproportionately large share of these cases with over 10 million cases and over 240,000 deaths to date. These numbers somewhat mask a much larger tragedy as it is being increasingly recognized that many additional deaths may have been attributable to COVID-19 and that many survivors face longer-term health consequences (and concomitant financial costs) that are only now beginning to be understood.

In addition to the health consequences of COVID-19, there have been staggering effects on the global economy. The International Labor Organization (2020) estimated lost work hours equating to a loss of 130 million full-time jobs in the first quarter of 2020 and 300 million full-time jobs in Q2 2020. The International Monetary Fund (2020) projected negative growth in 2020 for every advanced and nearly every developing economy in the world followed by a “sluggish” recovery in 2021. For example, the United States experienced its largest drop in gross domestic product (GDP) in history in Q2 2020 (Cox, 2020) with unemployment rising from a relatively steady rate of approximately 4 percent for the last couple of years to 11 percent in June 2020, down from higher rates earlier in the year (Bureau of Labor Statistics, 2020). In Europe, 2020 GDP forecasts (Statista, 2020) range from declines of 4.6 percent (Poland) to 11.2 percent (Italy). Similarly, historic declines are expected in Asia Pacific countries (Oxford Economics, 2020). Studies show that COVID-19 has been linked to financial and mental health concerns across the world (Commonwealth Fund, 2020). Coping with COVID-19 has been especially difficult in the USA, given that public perceptions about the disease have become highly politicized (Pew Research Center, 2020) with many citizens unwilling to follow recommendations of public health experts—a trend

that, if it continues, suggests that COVID-19 may continue to rage for many months to come.

Although COVID-19-related job loss is a health concern in and of itself, it is important to recognize that fear and anxiety abound, even among those who do not lose their jobs. A recent survey from the American Psychological Association's *Stress in America*<sup>TM</sup> (2020) reported that 74 percent of respondents indicated that the government response to COVID-19 was a significant source of stress in their lives. Their concerns, in part, are connected to their perceptions about the economic impact of COVID-19. For example, 70 percent of respondents described the economy as a significant source of stress—comparable to the 69 percent figure during the 2008 recession and considerably higher than the 49 percent figure reported in August 2019. Similarly, among other high income countries, a substantial proportion of survey respondents reported negative economic consequences stemming from the COVID-19 pandemic, ranging from 6 to 7 percent in Germany and the Netherlands to a high of 21–31 percent in Australia, Canada and the USA.

Thus, while economic stressors are ever present, COVID-19 has intensified these concerns, making it more challenging to cope with economic stress and likely extending the time it takes families to recover from economic stressors. Similarly, one's economic situation likely affects one's ability to cope with COVID-19. Those who have greater financial resources may be better able to contend with the massive life disruptions caused by COVID-19, such as homeschooling one's children, affording personal protective equipment (PPE) such as masks and hand sanitizer, and having greater resources to withstand some of the food and other shortages caused by COVID-19.

There is considerable variability in how employers, workers, and customers are responding to COVID-19. In the USA, for example, many employers have followed Centers for Disease Control and Prevention (CDC, 2020a) recommendations to implemented policies to protect employees, such as limiting the number of customers in stores, encouraging people to use hand sanitizer or wear face masks, and adopting contactless methods of delivering goods and services. However, extreme negative examples highlight the potential concerns employees face, such as being assaulted by customers who refuse to wear masks when requested (e.g., Armus, 2020) and employers who have banned their staff from wearing masks (e.g., Fattrell, 2020).

Although this wide range of possible responses to COVID-19 has been recognized in the popular press, these issues have received relatively little attention in peer reviewed literature to date, especially with regard to studies of the role of psychosocial factors in responses to COVID-19. Some research has focused on the emergence and transmission of the disease at work (e.g., Lan, Wei, Hsu, Christiani, & Kales, 2020; Park, Kim, Yi, Lee, Na, Kim, Kim, Kim, Kim, Park, & Huh, 2020) and recommendations for increasing occupational

safety, particularly in healthcare settings (for a review see Haghani, Bliemer, Goerlandt, & Li, 2020). Most of this research focuses on disease protection, with a more limited empirical literature on mental health issues (e.g., Dai, Hu, Xiong, Qiu, & Yuan, 2020; Lu, Wang, Lin, & Li, 2020) and workers' COVID-19-related knowledge, attitudes, and behavior (Zhang, Zhou, Tang, Wang, Nie, Zhang, & You, 2020).

Studies are needed to better understand the psychological processes guiding workers' responses to COVID-19-related stressors as well as to understand the interplay of economic concerns with these COVID-19-related stressors (Sinclair, Allen, Barber, Bergman, Britt, Butler, Ford, Hammer, Kath, Probst, & Yuan, 2020). Such research can advance the literature by enhancing theoretical understanding of the impact of large-scale public health crises, contributing to the development of empirically supported recommendations about how employers can better manage the organizational response to COVID-19, and identifying contextual factors that might influence how these processes unfold. Given these concerns, the general goal of our paper was to develop a model of proposed relationships of economic stress and occupational risk exposure with COVID-19-related attitudes, safety behavior, and occupational health and well-being. Our goal is not to articulate an all-encompassing model of every potentially relevant consideration but rather to identify some high priority factors and processes thought to shape employees' responses to COVID-19. We focus on resource depletion and risk perception as mediating mechanisms that offer theoretical insights into the links of economic stress- and COVID-19-related attitudes, behaviors and health outcomes. Because these relationships likely differ across individuals and contexts, we also describe potential moderators at the individual, unit, and macro-level that may affect antecedents and outcomes of risk perception and resource depletion.

Our model, presented in Figure 1, highlights three key themes. First, we propose a dual process model in which COVID-19-related occupational risk factors and economic stressors represent key threats to occupational safety and health. We focus on three types of safety and health outcomes: COVID-19-related attitudes, which reflect workers' attitudes toward compliance with CDC safety guidelines, safety performance, and health and well-being. Second, we describe risk perception and resource depletion as distinct processes thought to mediate the relationships of economic stress and COVID-19-related occupational risk factors with safety and health outcomes. Third, the model includes several contextual factors expected to have main and/or moderating effects on the core variables of interest. Ultimately, we hope that this work will help align workplace and governmental policies to facilitate optimal behavioral health outcomes during the concurrent economic and public health crises, and to help organizations proactively respond to similar issues in the future.

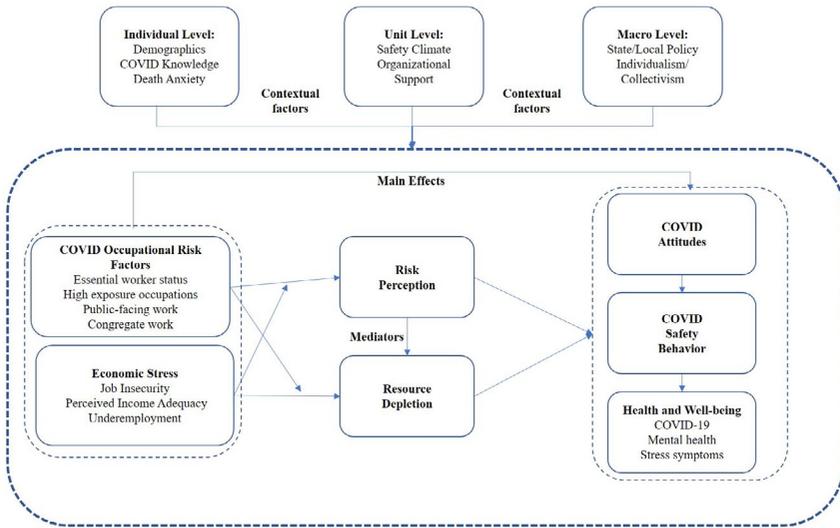


FIGURE 1. Economic stress and COVID-19 risk factors model. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

## Economic Stress during COVID-19

Economic stressors are “aspects of economic life that are potential stressors for individuals and families” (Voydanoff, 1990, p. 1102). These can be categorized on the basis of two dimensions (Probst, 2005): (1) the source of stress (either income- or employment-related) and (2) the nature of the stressor (either objectively or subjectively defined). With respect to the income-related stressors, *economic deprivation* refers to objectively defined sources of income-related stress and includes the inability to meet financial obligations and needs because of insufficient income and/or loss of current income or other financial resources. Moreover, *economic strain* refers to subjective perceptions of one’s financial status and perceived income adequacy. Regarding employment-related stressors, objective stressors fall into the *employment instability* category and include the number and duration of periods of unemployment, as well as downward mobility or extent of underemployment. Finally, *employment uncertainty* refers to subjective assessments of employment stability with the most common example being job insecurity, the perceived threat to the stability or future of one’s employment (Probst, 2004).

Unfortunately, the economic crisis triggered by the COVID-19 pandemic and the severe measures required to staunch the viral transmission have only served to increase these sources of economic stress. For example, as of September 2020, 94 percent of all workers globally lived in a country with

some level of workplace closures due to COVID-19. Moreover, globally, the estimated 12 percent reduction in work hours due to temporary closures or reduced demands equates to 245 million full-time equivalent jobs (International Labor Organization, 2020). Similarly, the income losses experienced by workers globally are estimated at approximately 11 percent with many workers experiencing far greater losses. Together, these figures paint a grim picture of the number of employees suffering from fears that they may be the next to lose their job, as well as lost hours and/or income due to furloughs and/or reduced business hours as businesses struggle to balance the economic desire to re-open and public demands for their services against compliance with governmental safety regulations and the need to maintain effective public health practices.

Indeed, a recent large survey of US employers (Korn Ferry, 2020) conducted in April 2020 found that 30 percent indicated they had already implemented or were considering salary cuts as a way to weather the economic crisis; approximately one quarter indicated they had either laid off employees or were considering doing so. Similar percentages reported actions to reduce costs via temporary layoffs and furloughs and/or reductions in work hours. These employer data comport with employee responses to a recent Pew Research Center survey (Parker, Horowitz, & Brown, 2020), in which 43 percent of respondents indicated they or a household member had lost a job or taken a pay cut due to the coronavirus pandemic. Not surprisingly, these events have also been associated with high levels of perceived income inadequacy with nearly one out of three Americans reporting they did not have enough funds to pay their bills. While financial strain is not new to the pandemic, these numbers are considerably higher compared to typical levels and have impacted lower- and middle-income households to a greater extent than upper-income households. Scenes of thousands of individuals lining up at food banks further highlight the sharply increased demand for basic essentials and hunger relief by an estimated 17.1 million new people in the short-term (Van Pykeren, 2020).

Decades of research has demonstrated the numerous adverse negative effects that economic stressors can have on workers and their families, including reduced physical and mental health, poorer long-term career outcomes, and impaired marital, family, and social relationships (see meta-analyses by Jiang & Lavaysse, 2018; McKee-Ryan & Harvey, 2011; Richardson, Elliott, & Roberts, 2013). Therefore, as Figure 1 illustrates, we expect to see similar main effects of economic stress on mental and physical health outcomes. Notably, early evidence suggests that such relationships may be further heightened during the pandemic. For example, in line with previous research, Gasparro, Scandurra, Maldonato, Dolce, Bochicchio, Valletta, Sammartino, Sammartino, Mariniello, Espedito di Lauro, & Marenzi (2020) found that job

insecurity was associated with more depressive symptoms among a sample of Italian dentists. However, this relationship was magnified among dentists who had greater fear of the virus due to their higher occupational exposure to COVID-19. Such findings highlight the complex interplay between occupational exposure, economic stress, and perceived risk.

Extensive prior research also suggests that employees facing economic stressors are at higher risk of adverse safety-related outcomes at work, including lower safety compliance, as well as more injuries and accidents (e.g., Jiang & Lavaysse, 2018; Petitta, Probst, Ghezzi, & Barbaranelli, 2020). Such effects have been posited to be due to attentional tunneling (Wickens, 1996) in response to stress whereby individuals place greater emphasis on primary task-related activities relative to more peripheral ones. Along those lines, research also indicates that employees often perceive a tradeoff between safety and production and believe organizations value the latter over the former, particularly when making layoff decisions (e.g., Probst, 2002; Probst & Brubaker, 2007). Employees also report fears of retaliation against speaking out about hazardous job conditions (Probst & Estrada, 2010). Moreover, research has shown that, in an attempt to preserve their job, employees may sacrifice protective safety behaviors in order to focus on outcomes they perceive the organization values more highly (Byrd, Gailey, Probst, & Jiang, 2018) such as maintaining productivity. Thus, as shown in Figure 1, we expect to observe similar negative effects of economic stress on COVID-19 safety behavior during the COVID-19 pandemic.

## Occupational Risk Factors

Employees' potential of exposure to COVID-19 depends on their job and job duties. Although there has not been much peer-reviewed literature published on occupational risk factors, WHO (2020a) recognizes that certain employees may be at a higher risk of exposure to COVID-19 due to occupational hazards. Several common occupational risk factors for exposure to COVID-19 have been identified, including but not limited to, essential work, high exposure industries, customer facing occupations, and occupations where large groups congregate (Occupational Safety and Health Administration [OSHA], 2020). Workers may experience overlap in the risk factors they are exposed to on the job. OSHA also notes that employees within the same industry, and even the same employee throughout the work week, may face changing risks as the exposure to these factors varies depending on their job duties.

*Essential Workers.* According to the ILO (n.d.), workers provide essential services if “the interruption of [work] would endanger the life, health or personal safety of the whole or part of the population” (Section

2 Definitions section, para. 1). This definition has been reaffirmed by US government agencies (e.g., Department of Homeland Security) during the COVID-19 pandemic as essential workers are employees and contractors in critical infrastructure sectors “needed to maintain the services and functions Americans depend on daily and that need to be able to operate resiliently during the COVID-19 pandemic response” (Cybersecurity and Infrastructure Security Agency [CISA], 2020). Generally, essential workers are unable to perform job duties remotely, but their positions have been deemed imperative to continue working through the pandemic. While healthcare workers, grocery store employees, and workers in more obviously “essential” jobs have received much of the attention since the start of the pandemic, there are several less apparent essential workers who have not been able to work remotely. For example, the CISA compiled an extensive list of essential critical infrastructure industries, such as transportation systems and logistics, emergency services (law enforcement, public safety, and other first responders), public works and infrastructure support, and critical manufacturing (CISA, 2020).

*High Exposure Occupations.* As a way of providing global guidance concerning risks of work-related exposure to COVID-19, WHO (2020b) developed a workplace risk assessment that classifies COVID-19 risk levels in three categories: lower exposure risk, medium exposure risk, and high exposure risk. In the United States, OSHA (2020) mirrors this classification system but includes a very high exposure risk group as well. Most workers occupy low to medium exposure risk positions; however, some workers hold positions with high to very high potential of exposure. Examples of high exposure jobs include healthcare staff who must enter COVID-19 patients’ rooms, emergency services workers responsible for transporting COVID-19 patients (i.e. ambulance operators), and mortuary workers handling bodies of COVID-19 victims. Workers in very high exposure risk jobs interact with known or suspected sources of COVID-19 through medical, laboratory, and postmortem procedures (OSHA, 2020). Similar to high risk exposure jobs, these very high risk workers are also often in the healthcare or mortuary fields but are at higher risk because they perform specific procedures on patients/bodies (i.e. aerosol-generating procedures such as intubation or dental work, handling specimens, conducting autopsies) that make them more susceptible to COVID-19 exposure.

*Public-Facing Occupations.* Unlike healthcare workers whose jobs more inherently involve risk of exposure to disease and illness, employees in public-facing jobs likely did not enter their field expecting to be pushed to the front-line during a global pandemic. Public-facing occupations, such as grocery store workers, retail workers, restaurant workers, and bank tellers, must frequently

engage in face-to-face interactions with the general public, increasing their risk of exposure to COVID-19. Public-facing jobs are generally considered medium risk exposure according to WHO's classification as these workers regularly come in close contact with people who may be infected but are not known or necessarily suspected sources of COVID-19 (WHO, 2020b). Fortunately, many employers are implementing changes to procedures and modifying the physical environment to prevent the spread of COVID-19 in line with the CDC's guidelines. For example, to help protect public-facing workers, employers have encouraged social distancing through adding physical barriers between employees and customers when possible (i.e. cashier shields), increased cleaning of frequently touched workspaces (i.e. keyboards, telephones, door knobs), and requiring both workers and customers to wear face coverings. However, not all organizations are initiating or enforcing these changes, leaving this already susceptible group of workers even more at risk of COVID-19 exposure at work.

*Congregate Work.* Congregate work is also considered to be in the medium risk exposure level category (WHO, 2020b). In congregate work, employees perform their job duties in high population density work environments (e.g., factory workers, education, correctional facilities, non-COVID-19 units in hospitals or long-term care facilities, homeless shelters), it is difficult to maintain 6 feet distance from others, increasing the risk of exposure to COVID-19. This is unique from the previous two occupational risk factors in that congregated workers generally interact with the same groups of people (coworkers, students, inmates, etc.) and the people in which these workers come into contact with usually are not known or suspected to have COVID-19. Dyal, Grant, Broadwater, Bjork, Waltenburg, Gibbins, Hale, Silver, Fischer, Steinberg, Basler, Jacobs, Kennedy, Tomasi, Trout, Hornsby-Myers, Oussayef, Delaney, Patel, Shett, Kline, Schroeder, Herlihy, House, Jervis, Clayton, Ortbahn, Austin, Berl, Moore, Buss, Stover, Westergaard, Pray, DeBolt, Person, Gabel, Kittle, and Hendren (2020) examined congregated workers in the meat and poultry industry and identified four challenges for these facilities to effectively respond to COVID-19: structural (i.e. social distancing on breaks, when entering/exiting the building, and on the production line); operational (i.e. adhering to cleaning and disinfection procedures in a fast pace, densely populated environment); sociocultural (i.e. communicating effectively across language and cultural barriers); and economic (i.e. combatting the incentivization for employees to work when sick). While these challenges were specifically observed in meat and poultry processing workers, it is likely that they generalize to other types of congregated work.

## Mediators

Our model describes dual mediating processes guiding how employees respond to economic stress and COVID-19 exposure. We emphasize the role of risk perception as a reaction to increased exposure to organizational risk factors. Additionally, we draw on resource depletion theories such as Conservation of Resources Theory and Scarcity Theory to discuss the impacts of economic stress. We expect interactions between the economic stressors and organizational risk factors such that workers experiencing greater levels of economic stress will perceive greater levels of risk at work and that the resource depleting impacts of economic stressors should be stronger for those with higher levels of the organizational risk factors.

*Risk Perception.* We propose that exposure to COVID-19-related risk factors should lead employees to perceive elevated levels of threat to their health. These risk factors are wide ranging, including food safety, patient safety, workers' physical health, public safety, concerns associated with medical treatments, and issues for pregnant women (Haghani et al., 2020).

Brewer, Chapman, Gibbons, Gerrard, McCaul and Weinstein (2007) note that perceptions about risk, which they define as perceptions about potential harm, are central to most models of health behavior. Although the relationship between risk perception and behavior varies, it is generally assumed that the potential for harm is an important factor shaping people's willingness to engage in healthy behavior, such as, in the case of COVID-19, wearing proper protective equipment, social distancing, and appropriate use of sanitizers. In the health literature, risk perception is often conceptualized as having three key components (Brewer et al., 2007). *Perceived likelihood* refers to the subjective probability of harm associated with the hazard. *Perceived susceptibility* refers to an individual's "constitutional vulnerability" to a hazard. *Perceived severity* refers to the amount of harm caused by the hazard. Thus, as it pertains to COVID-19, workers should perceive greater risks of exposure when there is a good chance of them contracting the disease, when they are especially vulnerable (e.g., because of pre-existing health conditions) and when they see COVID-19 as potentially causing death or serious physical harm. Conversely, workers with lower risk perceptions tend to believe their chances of getting COVID-19 are low, that they are not especially vulnerable, and that even if they contracted COVID-19 the harm would be minimal.

A critical question in the risk perception literature concerns the extent to which risk perceptions actually predict behavior. Brewer et al. (2007) review several meta-analyses of this literature, suggesting that there is a small but significant relationship between perceptions of risk and subsequent behavior. They also note that the literature is plagued by methodological problems,

particularly related to operationalization of risk constructs. For example, two individuals may rate their risk of getting COVID-19 as low for entirely different reasons, one believing that they are not vulnerable, the other because they plan to take appropriate precautions. Risk assessments also may be complicated by whether the assessment is conditional on whether the individual already has or plans to take some prior action in response to the risk, which then lead to inaccurate estimates of the risk perception-behavior relationship and challenges in evaluating the efficacy of health risk-related interventions. Thus, research on COVID-19 risk perceptions needs to proceed cautiously with regard to assessing risk perception and to follow lessons learned from prior research in this area (cf. Weinstein, 2007).

Researchers have begun to examine risk perception specifically in relation to COVID-19 exposure. Consistent with our model, studies show links between COVID-19 risk perceptions and mental health outcomes (Bruine de Bruin, 2020; Lee, Jobe, Mathis, & Gibbons, 2020; Yildirim & Güler, 2020). Other studies have focused on identifying predictors of COVID-19 risk perceptions (e.g., Dryhurst, Schneider, Kerr, Freeman, Recchia, van der Bles, Spiegelhalter, & van der Linden, 2020). However, generally they do not assess all three aspects of risk perception (likelihood, susceptibility, vulnerability) identified as important in health research.

In workplace safety literature, workers' accurate perceptions of workplace hazards are thought to play a central role in identification of and responses to occupational hazards (Leiter, Zanaletti, & Argentero, 2009; Perlman, Sacks, & Barak, 2014). Although not specific to COVID-19, previous literature has focused on risk perception in relation to workplace safety hazards, either examining personal and organizational antecedents of risk perception (e.g., Haynes, May, Lambert, & Keena, 2020; McLain, 2014) or risk perception as a predictor of safety-related behavior (e.g., Prati & Pietrantonio, 2012; Rao, Xu, Li, Li, & Zheng, 2017).

Similar to the health literature, the workplace safety literature also discusses multiple dimensions of risk assessment. Leiter et al. (2009) list three critical factors: lethality (which is essentially equivalent to severity in the health literature), prevalence (which strongly resembles likelihood), and control. Control differs somewhat from susceptibility in that control reflects employees' perceptions of their ability to cope with hazards at work, whereas susceptibility reflects vulnerability to illness and disease. In the case of communicable diseases possibly contracted at work, both control and susceptibility are likely to be relevant concerns.

Leiter et al. (2009) also distinguished prevalence from risk, where prevalence was operationally defined as the frequency that particular hazards are encountered at work and risk was defined as one's own level of potential risk of injury from a personal hazard. This resembles Yildirim and Güler's

(2020) distinction between concerns about self and concerns about others, highlighting the need for a multiple stakeholder approach to risk assessment that incorporates perceptions about one's own risks versus the risks experienced by others in the work environment. For example, a healthcare worker might not worry about contracting a disease but might worry about the possibility of transmitting it to family members with greater vulnerability. Other relevant stakeholders could include coworkers and the general public, such as customers/clients or anyone else potentially affected by COVID-19 exposure in a particular workplace.

Taken as a whole, prior research suggests that occupational risk factors associated with COVID-19 exposure should be positively associated with employees' perceptions of risks associated with COVID-19. The literature reviewed to date also suggests that employees who perceive greater risks of exposure to COVID-19 should hold more favorable attitudes about COVID-19 as well as engage in more COVID-19-related safety behavior at work. As coping with perceiving risks is stressful, those who perceive greater risks also should experience more resource depletion at work (discussed below) and as a result, less favorable well-being outcomes. However, because those perceiving greater risks should be more willing to act to prevent harm from risk exposure, they should also be less likely to contract the disease and, therefore, to report fewer COVID-19 symptoms.

We also expect interactions between economic stressors and COVID-19 risk factors in the prediction of risk perception. Based upon theory and research on employee voice and silence (Hirschman, 1970), we expect that workers who are worried about potential job loss may be more hesitant to voice concerns about potential COVID-19 risks. Indeed, research suggests that job insecurity is associated with a decrease in the use of voice (Berntson, Näswall, & Sverke, 2010; Breevaart, Lopez Bohle, Pletzer, & Muñoz Medina, 2020; Schreurs, Günter, Jawahar, & de Cuyper, 2015); moreover, such silence on the part of employees is understandable considering research findings that supervisors view employees who challenge (rather than affirm) them as a potential threat (Burris, 2012). Thus, employees already fearful of potential job loss may be less likely to speak out against perceived health and safety risks. As a result of perceiving (but not feeling able to voice concerns to change) such risks, employees may perceive greater risk of potential harm by continuing to work under those circumstances.

Economic literature on financial fragility (e.g., Lusardi, Scheider, & Tufano, 2011) also suggests a potential interaction between COVID-19 risk factors and economic stressors in the prediction of risk perception. Fragility refers to the extent to which a household would be able to successfully cope with a financial shock, such as an unexpected \$2,000 expense. Financial fragility co-occurs with economic stressors such that those experiencing high financial

burdens, job insecurity, and/or underemployment should be more concerned about potential adverse effects of risk exposure (lost work, medical costs, etc.) and, therefore, see the risks of COVID-19 as stronger than more financially secure employees.

*Resource Depletion.* While it is important to recognize that individual risk factors and individual dispositions may have an effect on (non) compliance with CDC-recommended behaviors to limit the spread of the novel coronavirus, it is equally important to acknowledge that employees do not live and work in a vacuum, and their behaviors may be influenced by their environmental context (Johns, 2006). As discussed in previous sections of this contribution and in the extant literature, both economic stressors and occupational risk factors have an adverse effect on a host of organizational outcomes. In this section, based on Conservation of Resources theory (COR; Hobfoll, 1989), we examine resource depletion as a second mediating mechanism that could explain the above-mentioned relationships.

COR was developed as a motivational theory but has since been adapted and applied to a variety of contexts and academic fields as a stress theory, including organizational behavior (Halbesleben, Neveu, Paustian-Underdahl, & Westman, 2014), health psychology (Hobfoll & Schumm, 2009), and resilience (Hobfoll, 2010). The core tenet of this theory is that employees strive to obtain, retain, and protect valued resources. Resources have been variously defined, and there seems to be little agreement on exactly what constitutes a resource (Halbesleben et al., 2014); however, COR describes several broad categories of resources, including objects (e.g., housing, food, clothes), conditions (e.g., stable and secure employment, status, marriage), personal characteristics (e.g., resilience, self-efficacy, optimism), energy (e.g., money, social support network), and contextual resources (e.g., community-based services, cultural context). Clearly, potentially losing one's employment and facing occupational risks are threats to employees' resources that may lead to actual resource loss.

Individuals coping with economic stressors may suffer additional adverse effects unique to the COVID-19 pandemic. Specifically, we expect that there will be negative effects on attitudes toward complying with the CDC guidelines and that workers operating under economic stress may be less able or willing to fully enact the CDC recommended COVID-19 guidelines. Specifically, scarcity theory (Mani, Mullainathan, Shafir, & Zhao, 2013; Mullainathan & Shafir, 2014), another resource-depletion theory, similar to COR, posits that perceived scarcity of basic necessities (e.g., food or money) consumes cognitive bandwidth, increases attentional tunneling, reduces optimal decision making, and depletes self-control. Applied to the COVID-19 pandemic, scarcity research suggests that economically strained workers have less capacity

to effectively respond to additional demands such as staying home within a reduced personal space, purchasing disinfecting supplies, stocking up on emergency supplies of groceries, or caring for children without school or day-care supports, all while attending to behavioral recommendations from public health officials. Therefore, as shown in Figure 1, we expect that economic stress will be associated with lower compliance with the CDC recommended guidelines to prevent catching or spreading the novel coronavirus.

Employees already in a precarious economic situation and those exposed to occupational hazards and risk factors will likely enter resource loss spirals due to the economic implications of the COVID-19 pandemic, which will further hamper their ability to enact COVID-19 preventative behaviors. In fact, one of the COR corollaries holds that those with greater resources are less vulnerable to resource loss (Hobfoll, 2010). The impact of resource loss is usually powerful, quite rapid, and tends to have long-term consequences beyond those in the immediacy of the stressful situation. Furthermore, loss cycles tend to occur in stressful situations because stress causes resource loss and one must invest some resources to cope with the initial resource loss, creating a loop of resource loss that is likely to extend over a long period of time (Schumm, Stines, Hobfoll, & Jackson, 2005) and that often has an accelerating speed, leading very quickly to a major resource loss from which individuals may not be able to recover (Ennis, Hobfoll, & Schroder, 2000). COR theory suggests three main explanations for such cycles.

First, economic stressors and exposure to occupational risk factors may limit the establishment of new resource reservoirs, which in turn could adversely impact the outcomes shown in Figure 1. In the United States, it appears that the American public opted to direct their limited resources toward creating future resource reservoirs, as data from the Federal Reserve Bank of St. Louis (2020) showed that,

overall, savings increased during the pandemic period. These resource accrual behaviors may be aimed at interrupting loss spirals by limiting future resource losses in the long run, but will still lead to lower enactment of CDC-recommended behavior *in the short term*. In fact, preventative health behaviors require an immediate resource investment (Hobfoll & Schumm, 2009), which is a further resource loss and may indeed deepen the loss spiral. Left with little resources as a result of economic stressors and savings, employees may see certain behavioral pathways as unavailable or too demanding and resort to noncompliance. Moreover, resource accrual behaviors could be foundational in weathering future economic downturns. Future research should investigate potentially differential motivational correlates of resource allocation behaviors.

Second, the mediation effect may be explained by noting that both economic stressors and occupational risks could consume key protective resources. In

the US context, health insurance is tied to one's employer. In this context, the threat of losing a job or potentially catching COVID-19 will have a series of devastating consequences. Considering that having a health insurance acts as a protective factor to limit further resource loss, getting dropped from the employer's plan (either because of job loss or because of reduction in hours) means that every medical need will entail a significant out-of-pocket expense. This is particularly relevant in light of: (a) recent estimates of the cost of getting COVID-19 treatment, which (in the USA) amounts to \$38,000 for insured patients and over \$88,000 for patients requiring mechanical ventilation (Rae, Claxton, Kurani, McDermott, & Cox, 2020); and (b) recent economic data indicating that, for example, more than half American households do not have the funds necessary to face an unforeseen emergency (JPMorgan Chase & Co. Institute, 2019).

Last, the emotional impact of resource loss needs to be mentioned. Research has shown that resource loss and emotional stress are linked bidirectionally (Hobfoll, Johnson, Ennis, & Jackson, 2003), which may be relevant to explain the adverse effect of affective economic stressors on a host of organizational outcomes and well-being. Given that economic stressors and occupational risk factors may by themselves cause resource loss, employees' emotional reactions and coping styles may further reduce the resources available, taxing the already limited resources when they are needed the most. Hence, both resource loss per se and the emotional burden associated with such loss may negatively impact employees' COVID-19-related attitudes, safety behaviors, and health.

Our model also includes a path reflecting proposed interactions between COVID-19 risk exposures and economic stressors in the prediction of resource depletion. Conservation of resources theory proposed what is referred to as corollary 1—that those with fewer resources are more vulnerable to resource loss (e.g., Hobfoll, 1989). This corollary implies that the stress-related (i.e. resource-depleting) effects associated with the COVID-19 risk factors should be stronger for those who already are in a resource-deprived state. Economic stressors such as underemployment, perceived income inadequacy, and job insecurity place people in just such a deprived state, meaning that those with higher levels of the economic stressors should experience even stronger resource-depleting effects when exposed to the COVID-19 risk factors.

## Outcomes

Our model includes three broad categories of outcomes of interest. These are not meant to be all-inclusive as there are a wide range of other possible outcomes that could be incorporated into such a model (we will briefly mention some of these in our discussion below). We chose to focus on three

core issues: (1) attitudes towards and compliance with COVID-19 prevention guidelines; (2) COVID-19-related safety behavior; and (3) health and well-being. The model depicts an implied causal structure such that attitudes toward compliance are thought to predict safety behavior and safety behavior influences health and well-being outcomes. However, we also expect direct paths from the mediational processes to some of these outcomes, as for example, the strain associated with resource depletion should directly predict health and well-being outcomes and perceptions of greater risk at work may predict safety outcomes through other pathways than through COVID-19 compliance-related attitudes and behaviors.

*COVID-19-Related Attitudes.* A small, but growing body of research has begun to study the behavioral implications of workers' COVID-19-related attitudes (e.g., Atas & Yildirim, 2020; Zhang et al., 2020; Zhong, Luo, Lo, Zhang, Liu, Li, & Li, 2020). At the end of July 2020, the CDC released an updated version of its recommendations to avoid the spread of novel coronavirus (CDC, 2020b), including wearing face coverings, maintaining at least 6 feet distance, and washing one's hands frequently for at least 20 seconds. Drawing from cognitive and social psychology, we define COVID-19-related attitudes as one's *cognitive* posture toward the enactment of CDC-recommended behaviors (Bazzoli, Probst, & Lee, personal communication). Cross-sectional research carried out at the beginning of the US outbreak suggests, in line with COR theory (Hobfoll, 1989, 2010), that more economically secure individuals (i.e. those suffering less from economic stressors) tend to show higher compliance with CDC-recommended guidelines (Wolf, Serper, Opsasnick, O'Connor, Curtis, Benavente, Wismer, Batio, Eifler, Zheng, Russell, Arvanitis, Ladner, Kwasny, Persell, Rowe, Linder, & Bailey, 2020) because they have more resources that can be devoted to meeting such recommendations. Research conducted a few months into the pandemic showed that this difference is still significant (Bazzoli et al., personal communication). Further research (Bazzoli et al., personal communication) showed that cognitive attitudes were a significant predictor of compliance with CDC guidelines only for participants who were economically secure before the outbreak of COVID-19; whereas worry of catching COVID-19 was the strongest predictor of compliance for their less economically secure counterparts. These findings are in line with COR theory, which suggests that more economically secure individuals have more resources available to facilitate translating their attitudes into preventative behaviors.

Interestingly, health psychology research shows that intervention programs aimed at increasing healthy behaviors by changing individuals' attitudes toward such behaviors are not very effective (Michie, Abraham, Whittington,

McAteer, & Gupta, 2009). Focusing on contextual resources and environmental circumstances may be more effective at increasing those behaviors. The relevance of previous resources is significant in building and/or maintaining a resource reservoir that may make available certain courses-of-action pathways only to resource-endowed employees, whereas the same pathways may be unavailable to those lacking the necessary resources to effectively allow them to pursue such behaviors. Hence, we predict that the most economically secure employees will show more positive COVID-19-related attitudes. Similarly, employees facing COVID-19-related occupational risk factors should show stronger attitudes toward CDC-recommended behaviors due to the saliency of the threat they are facing (Kaplan & Fishbein, 1969).

*COVID-19-Related Safety Behavior.* Prior research linking economic stressors and safety is extensive and there seems to be a consensus that employees experiencing higher levels of economic stress tend to report higher adverse safety-related and health outcomes (Petitta et al., 2020), specifically, lower safety compliance and higher accident rates. The general workplace safety literature distinguishes behaviors that are mandatory—for which compliance is expected and enforced—and voluntary behaviors (Griffin & Neal, 2000). Consistent with this, compliance with CDC-recommended preventative behaviors has been conceptualized as both mandatory (e.g., government guidelines for employers) and voluntary (e.g., the early calls to exercise “personal responsibility”); although as the pandemic progressed, the focus shifted toward requiring compliance. For example, in the United States, as of August 2020, a majority of states require face coverings while in public, while others “recommend” or “strongly encourage” face coverings. Ultimately, the determination as to whether compliance is required or suggested is best considered as a contextual determinant (i.e. organization-, local-, or state-level) as will be discussed below.

Consistent with findings in the general safety literature, research has shown that job insecurity and financial inadequacy are negatively related to compliance with CDC-recommended behaviors (Probst, Lee, & Bazzoli, 2020). The degree of control people experience over the implementation of such behaviors is also likely to play a role. Consider employees working in places in which social distancing is difficult to maintain or outright impossible, such as food processing plants, or workplaces that willingly disregard legally mandated safety guidelines: although individual employees may have positive attitudes toward (and be willing to) implement such behaviors, they are prevented from doing so.

Resource depletion and risk perception may also influence the relationship between economic stressors and safety outcomes. Resource-endowed people may have more means to comply with CDC-recommended behaviors because

more behavioral pathways are available to them, compared to people who are lacking resources. Employees' evaluation of their own risk exposure to COVID-19 may be attributable to both their occupational risk factors (as seen in Figure 1) and organizational factors (e.g., job design, employer's ability and willingness to provide PPE, availability of alternative work arrangements). Research has shown that emotional risk perception, as opposed to a rational risk calculation, predicted higher safety compliance and participation (Xia, Wang, Griffin, Wu, & Liu, 2017). Thus, employees may rely more on subjective worry and other affective-laden constructs when trying to determine their own risk perception in the workplace, which in turn will affect their likelihood of enacting safety behaviors.

*Physical and Mental Health Outcomes.* In the interest of space, we restrict our discussion to three broad categories of health-related outcomes: COVID-19 contraction/transmission, mental health outcomes and physical stress symptoms. We predict that employees will experience higher exposure/transmission rates, poorer mental health outcomes, and more physical symptoms of stress when they experience higher levels of resource depletion and greater perceived risk of exposure. Risk perceptions also may have an indirect negative effect on exposure/transmission through their effects on safety and compliance behavior. That is, employees who perceive higher levels of risk at work may be more likely to work safely and take appropriate precautions that, while increasing their stress at work may also lead them to be less likely to contract or transmit the disease.

Regarding COVID-19 exposure/transmission, we predict that workers who perceive higher levels of risk of COVID-19 exposure at work will be more likely to comply with mandatory COVID-19 safety requirements and engage in voluntary safety behavior. As a result, we expect these workers to be less likely to contract or transmit COVID-19. Workers experiencing resource depletion/strain as a result of economic stress or coping with COVID-19-related risks are less likely to follow CDC guidelines or to work safely (Probst et al., 2020). We would, therefore, also expect these workers to be more likely to contract or transmit COVID-19.

Regarding mental health, those who perceive higher levels of risk of contracting COVID-19 at work, as well as those experiencing greater resource depletion, should be at higher risk of mental health problems. As noted above, a small literature already links COVID-19 risk perceptions to mental health outcomes and a large literature links resource depletion to mental health outcomes. However, more information is needed about how these relationships might unfold in working populations, both to contribute to theory building and to inform potential interventions. Useful starting points to this research would include extending previous research on mental health concerns such

as depression, anxiety, and post-traumatic stress disorder (Arnetz, Goetz, Sudan, Arble, Janisse, & Arnetz, 2020; Sampaio, da Cruz Sequeira, & da Costa Teixeira, 2020; Wilson, Lee, Fitzgerald, Oosterhoff, Sevi, & Shook, 2020), occupation-specific outcomes such as burnout, and positive psychology outcomes such as subjective well-being or the experience of work as meaningful. Longitudinal research would be especially valuable (see Zacher & Rudolph, 2020 for an example). Healthcare workers have received substantial attention to date (see Haghani et al., 2020 for a review) but more research with an expanded list of both outcomes and occupations would clearly be valuable.

Finally, we would expect both perceptions of risk and resource depletion to be associated with higher levels of physical stress symptoms. Past literature has shown that work stressors are associated with higher levels of many physical health symptoms. For example, a meta-analysis by Nixon, Mazzola, Bauer, Krueger, and Spector (2011) showed that several work stressors were associated with individual health symptoms, including backache, headache, eyestrain, sleep disturbance, dizziness, fatigue, appetite, and gastrointestinal problems. Extending this finding to the current study would suggest that both economic stressors and COVID-19 risk perceptions should be associated with poor physical health symptoms and that resource depletion provides a potential explanatory mechanism for these relationships.

## Contextual Factors

Figure 1 shows three categories of contextual variables reflecting individual differences, unit/organizational processes, and regional (state/locality) effects. For the sake of parsimony, we did not add arrows depicting every conceivable effect of these variables on the core processes of our model. We also do not see these as an all-inclusive list, but rather as a starting point for testing hypotheses about the dual influences of economic stress and COVID-19 exposure.

*Individual Level Contextual Factors.* Individual differences influence the extent to which economic stressors and occupational risk factors impact employees' behavior and attitudes towards COVID-19 as well as their health. Specifically, we focus on demographic characteristics, COVID-19 knowledge and beliefs, and death anxiety.

Certain demographic characteristics (i.e. age, race and ethnicity, health status, family member health status) have been found to be interrelated in understanding one's experience of economic stress, presence of occupational risk exposures, risk perception, and subsequent COVID-19-related outcomes. The CDC (2020c) has identified several underlying health conditions to be

risk factors of severe illness from COVID-19 (e.g., cancer, chronic kidney disease, chronic obstructive pulmonary disease, obesity) as well as others that represent potential risk factors (i.e. asthma, pregnancy, hypertension). WHO (2020b) also suggests that age and pre-existing conditions are important factors in individuals' risk assessment for developing severe illness from COVID-19 exposure. Although there is limited data available, research has supported the increased severity of COVID-19 impact for people who have these pre-existing health conditions (Jordan, Adab, & Cheng, 2020; Li, Xu, Yu, Wang, Tao, Zhou, Shi, Zhou, Wu, Yang, Zhang, Yue, Zhang, Renz, Liu, Xie, Xie, & Zhao, 2020, Qiao, 2020). Additionally, the CDC (2020d) has noted the positive correlation between age and the severity of illness from COVID-19 such that older adults—especially those over the age of 85—are at the highest risk. Thus, employees may perceive a greater risk from work exposure to COVID-19 and may be more likely to engage in prevention safety behaviors if they or their family members are older and/or have underlying health conditions.

Racial disparities in COVID-19 and economic stressors cannot be ignored. COVID-19 studies have consistently found that some racial and ethnic minority groups are disproportionately affected by COVID-19 (Hawkins, 2020; Raifman & Raifman, 2020; Shab, Sachdeva, & Dodiuk-Gad, 2020). This is reflected by higher rates of COVID-19 cases, hospitalizations, and deaths in areas consisting predominately of racial and ethnic minority groups (CDC, 2020e). Several factors contribute to this increased risk, including discrimination, healthcare access and utilization, occupation, housing, and educational, income, and wealth gaps, most of which relate to economic stress.

One of the major challenges with the public health response to COVID-19 is vast differences in citizens' knowledge about the disease. Workers in high exposure industries, particularly in healthcare, tend to be knowledgeable about methods of reducing infection spread such as wearing PPE and engaging in more frequent sanitation practices (Kamineni, Balu, Sivagananam, Chellapandian, Chelladurai, Jayasheelan, Bopaiah, Ravikumar, Myeni, & Mohan, 2020; Atas & Yildirim, 2020; Zhang et al., 2020). Healthcare organizations have been forced to focus on COVID-19 safety concerns and generally allocate larger budgets for PPE and safety training; this may not be the case for other medium-to-high risk occupations. Workers in other occupations may generally be less knowledgeable about COVID-19 and less receptive towards complying with safety guidelines. Lower economic status individuals tend to be less knowledgeable about COVID-19 and less accepting of participating in spread prevention behaviors (Zhong et al., 2020). This relationship may capture differences in occupations and education levels that help explain the disparity based on economic stress.

Lastly, the COVID-19 pandemic has been anxiety-inducing for many individuals. As the death toll of COVID-19 continues to rise and more workers

have personal stories of family, friends, or coworkers who become severely ill or die from the disease, the fear of mortality from COVID-19 becomes more salient and induces death anxiety. Death anxiety, “the unpleasant emotion resulting from existential concerns that are provoked on contemplation of the death of the self or others” (Sliter, Sinclair, Yuan, & Mohr, 2014, p. 760), is a specific type of anxiety that has become increasingly relevant due to the mortality associated with the pandemic and constant exposure to visible death cues (face masks, public health campaigns, etc.).

Limited research has specifically examined death anxiety and COVID-19. The research available suggests that death anxiety during the pandemic correlates with higher levels of coronaphobia (e.g., fear and anxiety of COVID-19; Lee et al., 2020) and diminished mental health (Ho et al., in press; Menzies & Menzies, 2020). Studies have also found that fear of COVID-19 and death by COVID-19 is associated with depression and future career anxiety (Mahmud, Talukder, & Rahman, 2020). To our knowledge, no research to date has tested death anxiety’s causal impact on health behaviors. However, an experimental study by Bozo, Tunca, and Šimšek (2009) showed that participants in the death anxiety condition were more likely to engage in health-promoting behaviors than the control group. Although the study was not conducted during the pandemic, the findings reflect how workers with greater fear of death may be more likely to follow COVID-19 safety guidelines. Thus, individual differences in workers’ death anxiety influences their COVID-19 attitudes, safety behavior, and health both directly and through their risk perceptions.

*Unit Level Contextual Factors.* Organizational responses to COVID-19 have ranged from supportive and encouraging to bizarre and horrifying. While many employers have taken great pains to ensure the safety and health of their workforce through responses such as increased PPE and telework, others have demonstrated a comparative lack of regard for their employees’ health or even fired or threatened to fire employees for wearing masks (e.g., Ranosa, 2020). Employees also have faced cases of being verbally confronted by or physically assaulted by customers who refuse to wear masks or follow other safety protocols.

The range of responses can be illustrated by examining how professional sports leagues have responded to COVID-19. In the United States, the National Basketball Association, Women’s National Basketball association, and National Hockey League all placed players and team staff in a “bubble” isolated from the outside world supported by extensive testing and strong penalties for players who violate isolation/distancing policies. In contrast, the National Football League and Major League Baseball both resumed their activities with much more limited protections/plans in place, with both sports

experiencing multiple outbreaks of COVID-19 among players and staff (e.g., Perry, Acquavella, & Anderson, 2020).

Organizational policy differences are likely to affect organizational outcomes. For example, a recent survey of over 1,000 employees by TopResume (2020) found that 68 percent of respondents would consider leaving their job because of mistreatment by their employer during the pandemic. Similarly, several professional athletes opted out of their 2020 season due in part to a lack of confidence that they would be safe at work. Mistreatment and poor management are likely to be especially harmful/concerning for employees experiencing higher levels of economic stress as well as those who work in jobs with higher levels of exposure to COVID-19 risk factors.

Employer-level considerations are especially important in the COVID-19 response because of the lack of a coordinated federal level approach along with considerable variability both within and between states/regions in terms of how localities are responding to COVID-19 concerns. Employers often shoulder the burden of ensuring the safety, health, and well-being of their workforce to the extent that large national employers such as Home Depot, Costco, and Walmart (just to name a few examples) are effectively shaping national policy by their safety practices while other companies do very little to ensure employee safety.

Accordingly, we describe two unit-level factors that characterize employees' perceptions of their organization's relative concern for their safety, health, and well-being: safety climate and perceived organizational support. We expect that employees who perceive a stronger positive safety climate and who perceive higher levels of organizational support will experience less resource depletion as a result of economic stress and perceive fewer risks as a result of exposure to COVID-19 risk factors. In both cases, we use the term "unit level" to refer to their focus on actions of employers rather than in terms of whether to study the variables at the individual or organizational level.

Organizational climate is broadly characterized as "an experientially-based description of what people 'see' and report happening to them in an organizational situation" (Ostroff, Kinicki, & Muhammad, 2013, p. 644). Schneider's (1975) approach to climate research articulates multiple climate constructs differing in their strategic focus, each reflecting different organizational goals and priorities (service, innovation, justice, etc. Ostroff et al., 2013). Zohar (1980) is widely credited for conceptualizing safety climate as one of these strategic focus areas; he defined safety climate as "shared employee perceptions about the relative importance of safe conduct in their occupational behavior" (p. 96). A substantial body of empirical evidence links safety climate to safety outcomes (Hofmann, Burke, & Zohar, 2017) and demonstrates

the effectiveness of safety climate interventions (Lee, Huang, Cheung, Chen, & Shaw, 2018).

The COVID-19 pandemic has highlighted the importance of safety climate in managing workers' responses to COVID-19 threats. Many jobs that previously might have been regarded as not especially dangerous, such as customer-facing retail, or grocery store jobs, are now recognized to be essential to societal functioning and more hazardous than ever before. Safety also takes on a greater significance in jobs that were previously recognized as somewhat dangerous, such as healthcare, education, and factory work. In these jobs, workers who believe that safety is an organizational priority may be more willing to take potentially inconvenient or uncomfortable steps to protect their own safety or that of others in the organization (customers, coworkers etc.). Conversely, compliance with CDC guidelines may be lower when workers do not believe their organization prioritizes safety.

Perceived organizational support (POS) refers to employees' perceptions of the extent to which they perceive their employer to value them as a person and to care about their well-being (Eisenberger, Huntington, Hutchison, & Sowa, 1986). Multiple meta-analytic reviews of the POS literature demonstrate that, consistent with Organizational Support Theory, employees who perceive high levels of organizational support feel obligated to reciprocate the organization's favorable treatment through better job attitudes, lower turnover intentions, better job performance, and higher engagement, and report higher levels of well-being (Hofmann, Burke, & Zohar, 2017; Rhoades & Eisenberger, 2002). Organizational Support Theory identifies three broad classes of antecedents of POS, including treatment by organizational members, the quality of the employee-organization relationship, and human resource practices and job conditions (Kurtessis, Eisenberger, Ford, Buffardi, Stewart, & Adis, 2017).

POS likely has many connections to the variables in our model, including both main and moderating effects. We focus on its role as a contextual moderator. Specifically, we expect that POS will help buffer employees from the adverse consequences of economic stressors by serving as an alternate resource they can draw on to cope with their circumstances. Similar to the proposed effects of safety climate, POS also should reduce perceptions of risk experienced by employees who are exposed to COVID-19-related hazards as it should convey that the organization will do its best to address any emerging health concerns as well as to care for employees who experience COVID-19-related problems. Regarding resource depletion, employees with a stronger sense of POS may experience strain as a result of resource depletion but still be willing to engage in safe behavior at work and hold favorable attitudes about compliance with COVID-19-related recommendations out of a sense of obligation to their employer and their coworkers.

## Macro-Level Contextual Factors

Employees' behavior can be shaped by the larger economic, social, and cultural system in which a person is embedded (ten Brummelhuis & Bakker, 2012). This can include public policies, the economic standing of a population, social equality, wealth, and other sociocultural elements that affect one's context. Regarding the COVID-19 pandemic, countries around the globe have exhibited large variability in the enactment of policies that affect the lives of nearly every worker within their jurisdictions. Whereas some have implemented strict lockdowns, quarantines, travel bans, and mask wearing requirements, others have evinced few coordinated efforts or policies. Similarly, within the context of economic stress, different countries offer vastly differing social safety nets to workers who do temporarily or permanently lose their ability to work (ranging from little or no unemployment compensation to extremely generous incentives to stay home on temporary furlough).

Such differing policies can directly impact risk perceptions as well as occupational exposures and levels of economic stress. For example, in the United States, state-imposed lockdowns shutting down the economy provided early clues regarding the gravity of the COVID-19 pandemic compared to the traditional flu season. State mandates to wear face coverings provided an additional layer of protection (pun intended) to workers who are considered essential and/or have returned to work on-site as jurisdictions reopen their economies. Legislation such as the CARES Act (Pub.L. 116–136, H.R. 748.) provided incentives to employers to provide financial assistance to employees even while on furloughs. Such policies can serve to influence perceptions regarding individual health and economic risks associated with the pandemic.

Differential policies can also affect the extent to which economic stress and occupational risk factors are associated with adverse COVID-19-related outcomes. Resource theories (ten Brummelhuis & Bakker, 2012) argue that macro-level resources (e.g., organizational resources, public policies, social equality) can serve to offset and/or attenuate potential resource loss. Indeed, at the country-level, previous research (Debus, Probst, König, & Kleinmann, 2012) has demonstrated that the relationships between job insecurity and adverse outcomes were attenuated among workers who live in countries with more generous social safety nets. Similarly, evidence from data collected during the early stages of the COVID-19 pandemic (Probst et al., 2020) suggest that job insecure workers in US states with more robust unemployment wages were more likely to enact the CDC-recommended COVID-19 prevention behaviors (e.g., maintaining social distance, frequent handwashing, and disinfection) compared to their counterparts in states with less generous unemployment benefits.

While scarcity theory (Mani et al., 2013; Mullainathan & Shafir, 2014) suggests that policies alleviating the causes of perceived scarcity (e.g., insecure employment, financial strain) may restore some of the attentional capacity that is drained by these conditions, government policy restrictions that add to the already high cognitive burden/scarcity mindset triggered by economic stress may have unintended effects. For example, workers who are already focused on making next month's rent payment may simply not have additional resources to also "stay home," stockpile emergency groceries, and purchase masks, disinfectants, and hand sanitizers.

Indeed, recent research (Probst et al., 2020) suggests some public health measures to stem the tide of COVID-19 (e.g., stay at home orders, school closures) may be less beneficial to financially strained workers. In their study, Probst et al. found that such state-level measures appear to primarily benefit more financially secure workers. Specifically, in states with more COVID-19-related restrictions, financially secure workers reported enacting more of the recommended COVID-19 prevention behaviors (social distancing, staying at home except for essential tasks, etc.). However, financially strained workers did not reap these benefits and instead exhibited similarly lower levels of following the COVID-19 guidelines as financially strained workers in states with fewer COVID-19 restrictions. Such results indicate that researchers and policymakers need to specifically address the needs of such workers in order to better enable them to benefit from the guidelines meant to protect everyone.

Country-level differences in cultural values can also impact attitudes and behaviors related to COVID-19 mitigation policies (e.g., mask wearing, social distancing). For example, collectivist cultures emphasize a focus on group affiliations, fostering collective success, and adherence to social norms (Triandis, 1993). Thus, it is not surprising that even prior to the COVID-19 pandemic, mask wearing was a common practice in many collectivist cultures during the flu season (Wong, 2020). Moreover, public health campaigns such as Washington state's "My mask protects you and yours protects me" may be less effective in more individualistic countries such as the USA that tend to emphasize personal choice and independence. Indeed, recent empirical research (Biddlestone, Green, & Douglas, 2020) found that collectivism was predictive of greater social distancing and hygiene-related intentions, whereas individualism was associated with fewer intentions to socially distance during the pandemic.

Additionally, employees in countries higher in power distance (where there is an acceptance of hierarchy and authority stemming from individuals higher in the social order) may be more likely to comply with public health and workplace guidance, and may be more likely to perceive that adhering to such guidance can reduce their risk of exposure. Indeed, early research indicates that the trajectory of the spread of COVID-19 was flatter in countries

higher in power distance (Messner, 2020). This suggests that organizations and public health officials in lower power distance countries where there is less acceptance of behavioral direction from authority figures might more fruitfully work to achieve consensus and gain buy-in from workers when developing COVID-19 prevention guidelines.

## CONCLUSIONS

Many workers face dual challenges coping with worries about economic stress and the risks associated with exposure to COVID-19. These challenges interact such that economic stress may exacerbate the difficulties workers have in remaining on the job; lower income and less secure workers may have to risk their personal health to maintain their jobs. Our paper presents an initial research framework for examining resource depletion and risk perception as central mediating mechanisms in the response to economic stress and COVID-19 risks and identifies several contextual variables expected to influence responses to these variables.

Although we developed this model with the specific aim of understanding workers' behavior in response to the COVID-19 pandemic, many components of our model may be broadly applicable to other organizational issues. For example, while some research has shown relationships between job insecurity and safety-related outcomes (e.g., Probst & Brubaker, 2001) little research has examined how other forms of economic stressors relate to safety outcomes. Yet, it seems reasonable that workers experiencing financial strain (low income, high debt, etc.) may perceive and respond differently to safety risks at work. Moreover, the general relationship between risk perception and resource depletion may be broadly applicable to a variety of decision-making contexts that entail some form of uncertainty/risk in the outcomes. Finally, there is limited research in applied psychology that investigates connections between government policy and organizational behavior. We believe this work has the potential to address many interesting questions in applied psychology, particularly those involving cross-national comparisons of workers.

Given that our model has not yet been tested, we are hesitant to make extensive practical recommendations based on it. However, we offer the following preliminary comments for employers. First, the economic stress literature highlights that lower income/less secure/underemployed workers may be especially affected by the pandemic and may lack the resources to cope with pandemic-related demands. Organizations need to craft policy responses to COVID-19 that consider these vulnerabilities, such as cost-cutting measures that preserve jobs for lower income employees and clear communications that prepare workers to cope with changing circumstances. Second, risk perception literature highlights the role of fears about COVID-19, both as a potential

stressor with adverse consequences and as a potential motivator of desirable behavior. Risk perceptions reflect uncertainty about the future and the dread associated with possible consequences of an event (Slovic, 1987). Employers need to help manage this uncertainty and dread through frequent clear communications and efforts to assure employees that all possible steps are being taken to enhance safety. Finally, compliance with government guidelines is an important determinant of health outcomes. Organizations should ensure that employees understand these guidelines and that they have the motivation and resources (sanitizers, PPE, etc.) necessary to behave safely at work.

COVID-19 will not last forever. However, recent history suggests that other pandemics may happen in the near future as well as other large-scale disasters with similar workforce implications. We believe it is especially important to understand how vulnerable workers such as those with high levels of economic stress, respond to such events and studies of COVID-19 should be informative for these future research needs.

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